

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|  |   |  |
|--|---|--|
| Applicant's or agent's file reference<br><b>WFP86709</b> | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/GB 03/04716</b>  | International filing date (day/month/year)<br><b>31/10/2003</b>   | (Earliest) Priority Date (day/month/year)<br><b>31/10/2002</b> |
| Applicant<br><b>HORTICULTURE RESEARCH INTERNATIONAL</b>  |   |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

## 4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

## 6. The figure of the drawings to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures.

GB 03/04716

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C12N15/80

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, EMBASE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| X          | WO 96/41882 A (PROEFSTATION VOOR DE CHAMPIGNO ; RIJKSLANDBOUWHOGESCHOOL (NL); GRIE) 27 December 1996 (1996-12-27) examples 3-5  | 1,2,<br>12-17         |
| P,X        | WO 03/078629 A (BASF PLANT SCIENCE GMBH) 25 September 2003 (2003-09-25)<br>page 1, line 4 - line 44<br>page 16, line 43 - page 17, line 34<br>page 22, line 27 - line 31<br>page 41, line 1 - line 7<br>-----<br>-/-- | 1,14                  |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

15 March 2004

Date of mailing of the international search report

22. 04 2004

Name and mailing address of the ISA

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PCT/GB 03/04716

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| A          | <p>DATABASE EM GSS [Online]<br/> 29 May 1999 (1999-05-29),<br/> GENOSCOPE: "Drosophila melanogaster genome<br/> survey sequence TET3 end of BAC #<br/> BACR13D04 of RPCI-98 library from<br/> Drosophila melanogaster (fruit fly)"<br/> XP002271469<br/> Database accession no. AL065139<br/> abstract</p>  | 3,6,10                |
| A          | <p>EASTWOOD DANIEL C ET AL: "Genes with<br/> increased transcript levels following<br/> harvest of the sporophore of Agaricus<br/> bisporus have multiple physiological<br/> roles"<br/> MYCOLOGICAL RESEARCH,<br/> vol. 105, no. 10, October 2001 (2001-10),<br/> pages 1223-1230, XP008027677<br/> ISSN: 0953-7562<br/> table 1</p>   | 5                     |
| A          | <p>KRUSZEWSKA J S: "HETEROLOGOUS EXPRESSION<br/> OF GENES IN FILAMENTOUS FUNGI"<br/> ACTA BIOCHIMICA POLONICA, POLISH<br/> SCIENTIFIC PUBLISHERS, WARSAW, PO,<br/> vol. 46, no. 1, 1999, pages 181-195,<br/> XP001000689<br/> ISSN: 0001-527X<br/> the whole document</p>   | 1-4,8,<br>10,12-17    |
| A          | <p>KONDOH O ET AL: "A fruiting body-specific<br/> cDNA, mfbAc, from the mushroom Lentinus<br/> edodes encodes a high-molecular-weight<br/> cell-adhesion protein containing an<br/> Arg-Gly-Asp motif"<br/> GENE, ELSEVIER BIOMEDICAL PRESS,<br/> AMSTERDAM, NL,<br/> vol. 154, no. 1,<br/> 27 February 1995 (1995-02-27), pages<br/> 31-37, XP004042498<br/> ISSN: 0378-1119<br/> figure 2</p> | 1-4,8,<br>10,12-17    |
| A          | <p>ANDO AKIRA ET AL: "A gene encoding a<br/> hydrophobin, fvh1, is specifically<br/> expressed after the induction of fruiting<br/> in the edible mushroom Flammulina<br/> velutipes"<br/> CURRENT GENETICS,<br/> vol. 39, no. 3, May 2001 (2001-05), pages<br/> 190-197, XP008027699<br/> ISSN: 0172-8083<br/> page 1909, column 1, line 9 - line 20</p>                                       | 1-4,8,<br>10,12-17    |

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## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.      |
|------------|--|----------------------------|
| A          | <p>DE GROOT PIET W J ET AL: "Isolation of developmentally regulated genes from the edible mushroom <i>Agaricus bisporus</i>"<br/>MICROBIOLOGY (READING),<br/>vol. 143, no. 6, 1997, pages 1993-2001,<br/>XP002271468<br/>ISSN: 1350-0872<br/>page 1997, column 1, paragraph 2 - page<br/>1999, column 1, paragraph 1<br/>-----</p> | <p>1-4,8,<br/>10,12-17</p> |

Information on patent family members

GB 03/04716

| Patent document<br>cited in search report |   | Publication<br>date |    | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----|----------------------------|---------------------|
| WO 9641882                                | A | 27-12-1996          | AU | 5914196 A                  | 09-01-1997          |
|   |   |                     | WO | 9641882 A1                 | 27-12-1996          |
| -----                                     |   |                     |    |                            |                     |
| WO 03078629                               | A | 25-09-2003          | DE | 10212892 A1                | 09-10-2003          |
|   |   |                     | WO | 03078629 A1                | 25-09-2003          |
| -----                                     |   |                     |    |                            |                     |

## INTERNATIONAL SEARCH REPORT

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: 5 (no search), 3,4 (incomplete search)  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1,2,12-17 (all partially); 3,6,8,10 (completely)

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 5 (no search), 3,4 (incomplete search)

Present claims 3-5 relate to a product defined by reference to the following parameter(s):

P1: A fungus comprising a promoter termed "abst1";

P2: A fungus comprising a promoter termed "rafe";

P3: A fungus comprising a promoter termed "mag2".

The use of these parameters ( i.e. the use of an arbitrary promoter designation that was chosen by the applicant, but which is unknown in the prior art) in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is not meaningful to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible. Consequently, the search for claims 3 and 4 has been restricted to fungus comprising a promoter as defined in claims 6 and 7.

Further, present claim 5 relates to a fungus comprising a promoter termed "mag2", wherein no such promoter sequence is disclosed in the application as filed, but only the corresponding cDNA sequence is indicated.

In the present context the provision of the corresponding cDNA sequence cannot be regarded as a definition of the so-called "mag2" promoter. Hence, the lack of sequence data of the "mag2" promoter and the lack of any other data which are suited to unambiguously define said promoter is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful search impossible. Consequently, no search has been carried out for claim 5.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2,12-17 (all partially); 3,6,8,10 (completely)

A filamentous fungus transformed with a heterologous sequence of DNA, wherein said heterologous DNA is under the control of a promoter active only during stage 1 or later of the development of the fruiting body, in particular the promoter abst1 comprising the sequence of SEQ ID NO:12 and methods for producing substances by use of said fungus.

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2. claims: 1,2,12-17 (all partially); 4,7,9,11 (completely)

A filamentous fungus transformed with a heterologous sequence of DNA, wherein said heterologous DNA is under the control of a promoter active only during stage 1 or later of the development of the fruiting body, in particular the promoter rafe comprising the sequence of SEQ ID NO:13 and methods for producing substances by use of said fungus.

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